

## REMARKS

This Amendment is presented in response to the non-final Office action dated September 2, 2009, wherein claims 20-41 are pending and have been rejected. By this Amendment, each of the independent claims (20, 26, 32 and 37) have been amended. Therefore claims 20-40 remain at issue.

In the Office action, claims 20, 26, 32 and 37 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the description requirement. The Examiner stated that the claims contained subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

By this Amendment, claims 20, 26, 32 and 37 have been amended to specify a “low rate band processing unit,” and “a signal sequence of a low rate band of a data communication band.” (emphasis added)

Referring to the specification, claims 20, 26, 32 and 37, as amended, are well supported by the specification as follows:

1. “In a conventional asynchronous digital subscriber line (ADSL), voice signals are transferred through a voice band and high speed signals including Internet data signals are transferred through a high frequency band by modulating the high speed signals in carrierless amplitude modulation (CAP) mode or discrete multitone (DMT) mode.” (Page 1, lines 29-34, emphasis added)

2. “Low speed data can be transferred by using 4 lines of the low rate band at 64Kbps and high speed digital data can be transferred by using the high rate band at 6Mbps within 4 km.” (Page 2, lines 4-7, emphasis added)

3. “In the DLDMT ADSL, output signal  $X[n]$  is a sum of  $\{a_k\}$  signals and  $\{b_k\}$  signals. Low rate signals are transmitted based on  $\{a_k\}$  signals and high rate signals are transmitted based on  $\{b_k\}$  signals. The above mentioned concept is defined in the following equations as:

$$X[n] = \sum_{k=0}^{r-1} 1/\sqrt{N} a_k \exp(jk2\pi/Nn) + \sum_{k=r}^{n-1} 1/\sqrt{N} b_k \exp(jk2\pi/Nn) \quad \text{Eq. (1)}$$

$$a_k = 1/\sqrt{N} \sum_{k=\langle N \rangle} X[n] \exp(-jk2\pi/Nn), \quad 0 \leq k \leq r-1$$

$$b_k = 1/\sqrt{N} \sum_{k=\langle N \rangle} X[n] \exp(-jk2\pi/Nn), \quad r \leq k \leq n-1 .$$

A low rate processing unit of the DLDMT receives a home automation service (HAS) channel signal, maps the HAS channel signals into  $\{a_k\}$  signals and transfers the  $\{a_k\}$  signals to an inverse discrete Fourier transform (IDFT) unit.” (Pages 4, Lines 34 - Page 5, Lines 11; It is well known to one skilled in the relevant art that symbols  $\{a_k\}$  and  $\{b_k\}$  mean sequences of signals. )

Accordingly Applicants respectfully request withdrawal of this rejection.

In the Office action, the Examiner also rejected independent claims 20, 26, 32, 37, and dependent claims 21, 22, 24, 27, 28, 30, 33, 34, 38 and 39, as unpatentable over Petite et al. (U.S. 6,891,838), in view of Rippen et al. (U.S. 6,741,604).

The present invention is directed towards a communication system for home automation using advanced ADSL.

A home automation service provided by connecting a home network with a communication network is not in practical use. This is because a fixed Internet protocol (IP) address must be allocated to each home, and it requires maintaining a power-on dedicated computer which is capable of handling protocols for Internet service such as a user datagram protocol (UDP), transmission control protocol (TCP)/IP or a simple network management protocol (SNMP).

Therefore electric power is wasted maintaining the dedicated computer using electric power of 350W/h. Furthermore in a view of service provider, IP resources are not effectively used because the fixed Internet protocol (IP) address is allocated to each home.

That is, it is not effective to use a complicated routing procedure and the fixed IP address for providing the home automation service which can be provide by a comparative simple address allocation.

The present invention provides a communication system for a home automation service using ADSL. The home automation service of the present invention **can eliminate inefficient use of a fixed IP address and high energy consumption**. Further, the home automation service **can easily identify home networks by using a telephone number**.

One of the technical features of the present invention is “**mapping** an output signal of the home automation service channel module **to a signal sequence of a low rate band** of a data communication band.”

Petite et al., discloses only a conventional transmitting procedure. Petite et al., does not disclose or suggest any “mapping to a signal sequence of a low rate band” procedure.

Rippin et al., discloses that upstream and downstream are assigned on lower, middle and upper frequencies. Rippin et al., does not disclose any "mapping to a signal sequence of a low rate band" procedure.

Therefore the references (Petite et al. and Rippin et al.) do not disclose or suggest any "mapping to a signal sequence of a low rate band" procedure and are totally different than the present invention.

Further, the present invention uses a fully digital method which allocates resources by dividing a subcarrier channel (mapping the output signal to signal sequences of the low rate band). However, Rippin et al., uses an analog method which allocates resources by filtering (upstream and downstream are assigned on lower, middle and upper frequency).

Therefore Applicants submit that the present invention, as claimed in the claims subject to this rejection (independent claims 20, 26, 32 and 37, and dependent claims 21, 22, 24, 27, 28, 30, 33, 34, 38 and 39) are patentable over Petite et al., and Rippin et al. Accordingly Applicants respectfully request withdrawal of this rejection and allowance of independent claims 20, 26, 32 and 37, and dependent claims 21, 22, 24, 27, 28, 30, 33, 34, 38 and 39.


The Examiner rejected claims 23, 25, 29, 31, 35, 36, 40 and 41 as unpatenable over Petite et al., and Rippen et al., and further in view of Chen (U.S. 7,382,786).

Applicants submit that claims 23, 25, 29, 31, 35, 36, 40 and 41, being dependent, directly or indirectly, upon independent claims 20, 26, 32 and 37, are patentable at least for the reasons discussed above. Accordingly Applicants respectfully request withdrawal of this rejection and allowance of claims 23, 25, 29, 31, 35, 36, 40 and 41.

Should the Examiner wish to discuss the foregoing or any matter of form in an effort to advance this application toward allowance is urged to telephone the undersigned at the indicated number.

Dated: November 25, 2009

Respectfully submitted,

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